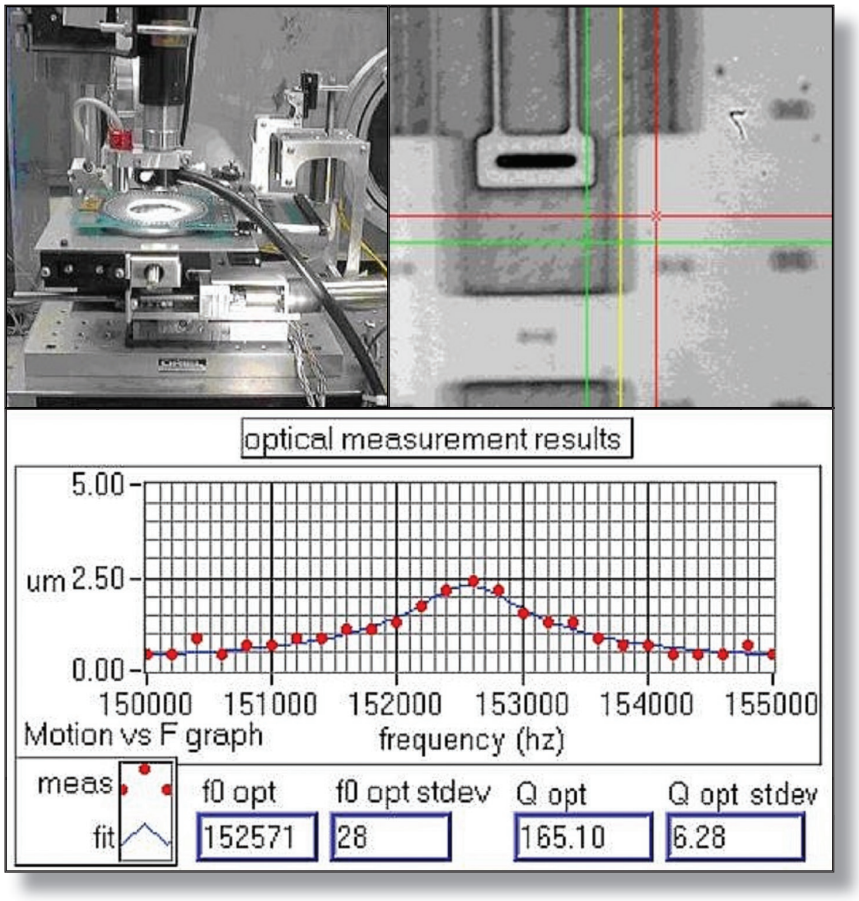
Air Force Research Laboratory|AFRL

Science and Technology for Tomorrow's Air and Space Force

Success Story

MEMS TECHNOLOGY DESIGN EVALUATION TEST BED



An Information Directorate-developed microelectromechanical systems (MEMS) test bed technology is enabling the development of a new generation of low power, rugged smart sensors and actuators that integrate mechanical, optical, fluidic, and electronic devices on a single chip. This unique new MEMS test bed is capable of rapid, accurate characterization of MEMS prototypes and products.

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Accomplishment

Interscience, Inc. of Troy, New York, developed the MEMSPEC™ product by incorporating a directorate-developed software that contains a patented Blur Synthesis Matching image-processing technique. This instrument can measure both horizontal and vertical displacements with nanometer resolutions in a vacuum or controlled atmospheric environment. The directorate's method enables characterization of MEMS motions at significantly higher frequencies than prior art.

Background

This MEMS technology evolved from MEMS program work co-sponsored by the directorate and the Defense Advanced Research Projects Agency/ Microsystems Technology Office. The directorate was the agent for this program and contributed in-house work focused on the design, evaluation, and improvement of MEMS resonators.

Interscience developed the MEMSPEC instrument as the first commercial MEMS tester. Previously, this instrument was capable of only coarse (1 um), slow (150 kHz) horizontal measurement capability, and prior methods used in other instruments were constrained to measuring the motions of MEMS below about 200 kHz.

Use of the new AFRL-developed measurement method removes that frequency limit. Directorate researchers expect the availability of the new instrument to speed the refinement of future generations of high-frequency MEMS systems.

Information
Technology Transfer

Additional information

To receive more information about this or other activities in the Air Force Research Laboratory, contact TECH CONNECT, AFRL/XPTC, (800) 203-6451 and you will be directed to the appropriate laboratory expert. (03-IF-02)